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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Koji Shigemura

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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/717,571	SHIGEMURA, KOJI	
	Examiner	Art Unit	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-19, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 7-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-19, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14-19 and 21-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in claim 14 for “a flat frame supporting the first flat surface” and “a flat cover mask support the second flat surface” in light of “a first flat surface extending over an entire area of the flat mask, and a second flat surface extending over the entire area of the flat mask”. The first and second flat surfaces refer to the *entire* flat surface of the mask. According to Figs. 3 and 6A-C, the frame and cover mask do not cover the entire flat surface of the mask. For the purpose of this examination, it will be interpreted that the frame and cover mask at least covers parts of the mask.

The specification does not fully support the limitation “wherein the flat frame and the flat cover mask *are the only elements that touch the flat mask*” (claim 22, emphasis added by Examiner). For example, the mask, cover mask, and frame can be joined together using an adhesive agent such as welding [0045]. The adhesive agent necessarily contacts the mask. Therefore, the frame and cover mask are not the only elements that touch the mask because the adhesive agent would come into contact with the mask as well.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 14-17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsugi et al. (2002/0150674) in view of Ito et al. (5,652,067) and Martin (4,676,193).

Utsugi teaches a method of manufacturing an organic EL device, the method comprising: forming a first electrode layer 11 in a predetermined pattern on an insulating substrate 10 [0038], [0044];

forming an organic film comprising at least a patterned emission layer 13 on the first electrode layer [0049];

forming a second electrode layer 15 in a predetermined pattern on the organic film [0038];

wherein the organic film and the second electrode layer are vapor deposited using a deposition mask frame assembly [0053]-[0054],[0058] comprising:

a mask comprising a thin plate 95 in which a predetermined pattern of apertures is formed (Figs. 2-4).

Utsugi does not explicitly teach sealing the electrode layer. However, it was extremely well known in the art of manufacturing organic EL devices to apply a sealing layer over the cathode to protect the cathode and the organic materials from harmful effects of air and moisture. See, e.g., Ito, col. 19, lines 30-39. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have sealed the second electrode layer in order to have protected the cathode and organic material from harmful effects.

Utsugi and Ito do not explicitly teach a frame supporting one surface of the mask so that the mask is tensed and a cover mask supporting an opposite surface of the mask.

Martin discloses a mask assembly that is suitable for vacuum vapor deposition (column 1, lines 13-21 and column 2, lines 54-59). Fig. 7 shows a mask assembly 32 comprising: a mask 40', a frame 34, and a cover mask 88. The frame and cover mask sandwich the mask. It would have been obvious to one of ordinary skill in the art at the time of invention to have used the mask assembly of Martin in the EL vacuum evaporation of Utsugi. One would have been motivated to do so with the expectation of using a mask assembly that is dimensionally stable at the operating temperatures of vacuum evaporation.

The mask in Fig. 7 of Martin does not have a flat surface extending over an entire area of the mask. In particular, a raised boss member 98 of the cover mask defines a clamping member counterbore (col. 10, lines 47-50) and causes the mask to lie in two separate planes. The clamping member counterbore seems to hold the entire mask assembly together, which would in turn provide the means for affixing the mask. One of ordinary skill in the art would realize that the elimination of the raised boss member and clamping member counterbore would result in the loss of such functions. However, Martin teaches in a different embodiment that welding can be used to join different parts of the mask assembly and that welding can be a means for affixing the mask (col. 8, lines 63-68; col. 10, lines 22-32). In view of this teaching, one of ordinary skill in the art would recognize that the step of welding would supplement the loss of the function of the raised boss member and clamping member counterbore. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have omitted the raised boss member and clamping member (i.e., such that the mask would have a flat surface extending over an entire area of the mask) and to have welded the mask assembly together after clamping the mask of Fig. 7 with a reasonable expectation of success because Martin teaches that welding is an operable method of joining parts of the mask assembly and affixing the mask with the desired tension.

Claim 15: Utsugi teaches that a mask can contain nickel [0042].

Claim 16: Martin teaches that the mask can be formed by electro-forming (column 1, lines 28-31).

Claim 17: Martin does not explicitly teach that the mask, frame, and cover mask can be joined together by welding. However, such is obvious as discussed above.

Claim 21: Martin teaches that the mask has substantially uniform tension (abstract). In other words, the tension of the mask may not be completely uniform. Thus, the tension of the mask may vary at different points.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsugi '674 in view of Ito '067 and Martin '193, as applied to claim 14 above, and further in view of Yamada et al. (U.S. Publication 2001/0019807).

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Utsugi, Ito, and Martin are discussed above, but do not explicitly teach that the mask can be *completely* formed of nickel or an alloy of nickel and cobalt.

Yamada teaches a method of vapor depositing EL materials with a mask, wherein the mask can be made of a metal such as nickel [0022]. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have made the vapor deposition mask of Utsugi and Martin out of nickel with a reasonable expectation of success because Yamada teaches that nickel masks are suitable in the art for vapor deposition.

6. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsugi et al. (2002/0150674) in view of Ito et al. (5,652,067) and Martin (4,676,193), as applied to claim 17 above, and further in view of Kitazume (2002/0025406).

Claim 18: Utsugi, Ito, and Martin are discussed above, but do not explicitly teach that the mask, frame, and cover mask are joined by spot welding. However, Kitazume teaches that spot welding is a suitable method for joining the pieces of a shadow mask used for vapor deposition to form organic EL devices [0004], [0010]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used spot welding as the particular method of joining the mask pieces of Martin with a reasonable expectation of success because spot welding is recognized in the art as a suitable method for joining the pieces of a shadow mask used for vapor deposition to form organic EL devices. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 19: The welding pitch may be 1 mm [0035].

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsugi et al. (2002/0150674) in view of Ito et al. (5,652,067) and Martin (4,676,193), as applied to claim 14 above, and further in view of Fujimori et al. (U.S. Publication 2002/0102754).

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Utsugi, Ito, and Martin are discussed above, but do not explicitly teach that the frame and cover mask are the only elements that touch the mask. In particular, adjusting means 64 of Martin is mounted and extended through supporting aperture 72 and supplemental supporting aperture 96 (col. 11, lines 1-4). Such adjusting means may come in contact with the mask when extended through the apertures (Fig. 7). The adjusting means seem to include a prealigned registration member 60 and a registration pin 62 (col. 9, lines 30-36; Fig. 1). The registration pin seems to be used for aligning the mask assembly to the gantry assembly, wherein the gantry assembly includes the deposition substrate and wherein the registration pins of the mask are aligned to the registration members 162, 164, 166 of the gantry (col. 18, line 54-col. 19, line 34; Figs. 21-23). In essence, the registration pin is used to provide a proper alignment of the mask to the substrate. However, Fujimori teaches that alignment marks on the mask and substrate with the use of a camera can be used for to make the proper alignment [0066]. Alignment marks 6 are simple indications on the surface of the frame of the mask and would not require any contact with the mask. Substitution of equivalents requires no express motivation (see MPEP 2144.06). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to used alignment marks as opposed to the registration pins and registration members of Martin to align the mask to the substrate with a reasonable expectation of success because Fujimori teaches that alignment marks is an operable equivalent for aligning the mask to the substrate.

### *Response to Arguments*

8. Applicant's arguments, see pgs. 6-7, filed 2/1/2007, with respect to claim 21 have been fully considered and are persuasive. The 35 U.S.C. 112, first paragraph, of the claim has been withdrawn.

9. Applicant's arguments filed 2/1/2007 have been fully considered but they are not persuasive.

Claims 14-17 and 21 as rejected over Utsugi '674, Ito '067, and Martin '193:

The Applicant argues on pgs 7-8 that the combination of references do not disclose or suggest the newly added limitation of "a flat mask comprising a flat thin plate in which a predetermined pattern of apertures is formed, the flat mask having a first flat surface extending

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over an entire area of the flat mask, and a second flat surface extending over the entire area of the flat mask; a flat frame supporting the first flat surface of the flat mask so that the flat mask is tensed and the first flat surface remains flat, and a flat cover mask supporting the second flat surface of the flat mask so that the second flat surface remains flat”. However, such a modification is obvious over Martin, as discussed above.

The Applicant argues on pgs. 8-10 that Martin specifically teaches away from welding the metal foil, supporting frame, and the clamping member in Fig. 7. The Applicant specifically points out that Figs. 1-6 uses welding to affix the mask while Fig. 7 uses a step of clamping. However, the Applicant’s argument is incorrect because the teaching of Martin does not rise to the level of teaching away. The alternative of clamping does not exclude welding. Martin does not teach or suggest that the combination of both affixing methods is inoperable.

The Applicant argues on pg. 10 that welding the metal foil, supporting frame, and clamping member would change the principle operation of the embodiment in Fig. 7 of Martin. However, the metal foil will still be clamped even with the addition of a welding step.

The Applicant argues on pg. 10 that the newly added limitation of “the flat mask is tensed with different tensions at different points on each of a plurality of sides of the flat mask” is not disclosed or suggested by the combination of references. However, Martin suggests this limitation, as discussed above.

Claims 18-19 as rejected over Utsugi, Ito, Martin, and Kitazume ‘406:

The Applicant argues on pg. 11 that the combination of references do not disclose or suggest “wherein the welds are dot welds” and “wherein a welding pitch between the dot welds is 3 mm or less”. However, Kitazume teaches spot welding that can have a pitch of 1mm, as discussed above. Spot welding is essentially dot welding.

Newly added claim 22:

The Applicant argues on pg. 12 that the cited references do not disclose or suggest the feature “wherein the flat frame and the flat cover mask are the only elements that touch the flat mask”. However, such is obvious over Fujimori ‘754, as discussed above.



*Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**KEITH HENDRICKS**  
**PRIMARY EXAMINER**